Abstract

The present invention is a method of deriving a reflectance function that analytically approximates the light reflected from an object model in terms of the spherical harmonic components of light. The reflectance function depends upon the intensity of light incident at each point on the model, the intensity of light diffusely reflected, and the intensity of light broadened-specularly reflected in the direction of an observer. This reflectance function is used in the process of machine vision, by allowing a machine to optimize the reflectance function and arrive at an optimal rendered image of the object model, relative to an input image. Therefore, the recognition of an image produced under variable lighting conditions is more robust. The reflectance function of the present invention also has applicability in other fields, such as computer graphics.